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Applicant: Tetsuya Nagano et al.

Serial No.: 10/034,073

Filed: December 28, 2001

Title: GRATING, NEGATIVE AND REPLICA
GRATING OF THE GRATING, AND METHOD
OF MANUFACTURING THE SAME

Atty. Dkt.: NGB-12833

Group Art Unit: 1772

Examiner: Donald Loney

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF (37 CFR § 41.71)

This brief is submitted in triplicate. If any fees are due for this filing, please charge such additional required fees to our Deposit Account No. 18-0160, our order No. NGB-12833.

Additional arguments are presented below. An appendix including the claims on appeal is also provided.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.



Signature of Person Mailing Paper

11/22/05

Date

James A. Balazs

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ARGUMENTS

A. The Rejection of Claims 1 and 5 under 35 U.S.C. §102(b) as being anticipated by Okayama et al.

Independent claim 1 defines patentably over Okayama et al. The Examiner, in response to Applicant's arguments within the Appeal Brief, states that figures 2 and 8 read directly upon the structure recited in the instant claims. However, the illustration in Fig. 2 is only schematic, and does not define a particular structure for the "structure for generating a phase difference formed at the boundary of the two layers". Rather, reference must be made to Figs. 3 and 4 for the only examples of the structure 10 provided in the Okayama et al. patent. The reference states at Col. 3, lines 28-30, "FIG. 3 and FIG. 4 show the configurations of the structure for generating the phase difference in the direction of x in FIG. 2".

B. The Rejection of Claims 1 and 5 under 35 U.S.C. §102(b) as being anticipated by Kataoka et al.

Independent claim 1 defines patentably over Kataoka et al. Claim 1 describes a grating having a groove cross section shape that is a half sinusoidal wave and a groove bottom part shaped as a flat form.

The Examiner, in response to Applicant's arguments within the Appeal Brief, asserts that Kataoka et al., Figures 7, 8 and 12 in and of themselves, read directly upon the structure recited in the instant claims.

Applicant reiterates that within the specification of Kataoka et al., there is no description of the shape of the diffraction grating. Thus, the Examiner is concluding that the bumpy representations shown in Figures 7, 8 and 12 are in fact

representations of the actual *shape* of the grating rather than just representations of where the grating is located when being observed in a side elevational view.

Applicant resubmits that the illustration of the grating in Figs. 7, 8 and 12 is schematic in nature, and cannot be taken literally. It would be clear to one skilled in the art that the size of the grating lines is such that they will not be visible in the manner depicted in Figs. 7, 8 and 12. Rather, in order to show 'something' when preparing these figures, the illustrator added 'bumps' to the figures as representing the grating lines. In this regard, comparison of the 'gratings' of Figs. 7 and 8 can be made with those of Fig. 9.

Clearly, Kataoka et al. is not directed toward a particular grating structure, but merely uses the grating as an alternative to the prism. Accordingly, the Kataoka et al. patent can only properly be cited for teaching that the prism structure and the grating may be interchangeably used in the application as a light control structure.

It is submitted that, due to the complete lack of disclosure, the Kataoka et al. grating can only be interpreted as being some already known (i.e., conventional) grating structure. Kataoka et al. may not properly be cited for teaching a particular grating structure because Kataoka et al. is silent as to the shape of the grating, which is the subject of the present invention.

C. The Rejection of Claims 3, 5 and 8-9 under 35 U.S.C. §102(b) as being anticipated by Imamura et al.

Claims 3, 5 and 8-9 define patentably over Imamura et al. The Examiner, in response to Applicant's arguments within the Appeal Brief, asserts that a "half saw tooth" wave is only a recitation of the wave being half the size it could have been. Further, the Examiner notes that the limitations from the specification are not read into the claims.

Applicant reiterates that although the specification of Applicant's application describes a half sawtooth shape completely different from the square wave or trapezoidal wave (either full sized or half-sized), a common mathematical manner of describing a sawtooth wave also describes a shape unlike the square wave or trapezoidal wave (either full or half-sized). The mathematically defined shape includes a line of constant slope and a vertical drop.

D. The Rejection of Claim 2 under 35 U.S.C. §103(a) over Okayama et al. in view of Imamura et al.

There is no suggestion or motivation in the art to support a combination of the Okayama et al. and Imamura et al. references, as suggested by the Examiner.

The Examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Applicant respectfully notes that even if it is obvious to combine the teachings of two references, the combination must teach all elements of the claim. Applicant simply notes that neither Okayama et al., Imamura et al., nor a combination thereof teach a diffracting grating resembling a half sinusoidal wave shape.

E. The Rejection of Claim 2 under 35 U.S.C. §103(a) over Kataoka et al. in view of Imamura et al.

There is no suggestion or motivation in the art to support a combination of the Kataoka et al. and Imamura et al. references, as suggested by the Examiner.

The Examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Applicant respectfully notes that even if it is obvious to combine the teachings of two references, the combination must teach all elements of the claim. Applicant simply notes that neither Kataoka et al., Imamura et al., nor a combination thereof teach a diffracting grating resembling a half sinusoidal wave shape.

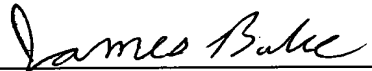
F. Conclusion

The prior art rejections of the cited claims should be reversed because none of the cited references, nor their combination, disclose or suggest the invention recited in the claims. Specifically, the rejection of claims 1 and 5 under 35 U.S.C. §102(b) as being anticipated by Okayama et al. or Kataoka et al. is in error. Also, the rejection of claims 3, 5 and 8-9 under 35 U.S.C. §102(b) as being anticipated by Imamura et al. is in error. Finally, the Rejection of claim 2 under 35 U.S.C. §103(a) over Okayama et al. in view of Imamura et al. or Kataoka et al. in view of Imamura et al. is in error.

For the reasons set for the herein, the rejections of the claims 1-3, 5 and 8-9 of the present application are in error and must be reversed.

Respectfully submitted,
Rankin, Hill, Porter & Clark LLP

Date: 11/22/05



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APPENDIX A

1. (previously presented) A grating having a groove cross section shape and a groove bottom part , wherein said groove cross section shape is a half sinusoidal wave and said groove bottom part is shaped as a flat form.

2. (original) The grating as claimed in claim 1, wherein a duty ratio of a groove width to a groove cycle of the grating is 0.5.

3. (previously presented) A grating having a groove cross section shape and a groove bottom part, wherein said groove cross section shape is a half sawtooth wave and said groove bottom part is shaped as a flat form.

4. (withdrawn) A negative grating manufactured by transfer from a grating having a groove cross section shape other than a laminar shape and a groove bottom part shaped as a flat form.

5. (previously presented) A replica grating manufactured by transfer from a grating having a groove cross section shape other than a laminar shape and a groove bottom part shaped as a flat form, wherein said groove cross section shape is selected from the group consisting of a half sinusoidal wave and a half sawtooth wave.

6. (withdrawn) A method of manufacturing a negative grating, said comprising:

preparing an original grating having a groove cross section shape other than a laminar shape and a groove bottom part shaped as a flat form;

bonding a negative substrate onto the original grating with an adhesive; and

paring the negative substrate from the original grating after the adhesive is hardened.

7. (withdrawn) A method of manufacturing a replica grating, said comprising:

preparing a negative grating manufactured from an original grating having a groove cross section shape other than a laminar shape and a groove top part shaped as a flat form;

bonding a replica substrate onto the negative grating with an adhesive; and

paring the replica substrate from the negative grating after the adhesive is hardened.

8. (previously presented) The grating as claimed in claim 3, wherein a duty ratio of a groove width to a groove cycle of the grating is 0.5.

9. (previously presented) The replica grating as claimed in claim 5, wherein a duty ratio of a groove width to a groove cycle of the grating is 0.5.